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Accidents.

Farm accidents don't just happen! They are caused. Implement Record. v. 35, no. 10. October 1938. p. 13, 48. Dangers: (1) Tractors (2) Trucks (3) Hay presses (4) Pruning.

High cost of carelessness. By J.E. Stanford. Southern Agriculturist. v. 68, no. 9. September 1938. p. 5. Discussion of preventable farm accidents and methods of rendering first-aid treatment when an accident does occur.

Agriculture.

Agricultural resources of Kansas. Kansas agricultural experiment station and Kansas state planning board. Manhattan, Kans., Kansas state college of agriculture, 1937. 227 p.

Factors for profitable farming on limestone hill land of the Eden formation in Kentucky. By J.H. Bondurant. Lexington, Ky., 1938. 225-246 p. Kentucky agricultural experiment station. Bulletin no. 384.

Fifty-first annual report of the agricultural experiment station of Nebraska. Lincoln, Neb., University of Nebraska, 1938. 67 p.

Some economic characteristics of owner-operated farms in South Carolina. By G.H. Aull. Clemson, S.C., 1938. 31 p. South Carolina agricultural experiment station of Clemson agricultural college. Bulletin 316.

Twenty-first annual report of the Department of agriculture, July 1, 1937 to June 30, 1938. Springfield, Ill., Dept. of agriculture, 1938. 180 p.

Type-of-farming areas of New Hampshire. By H. C. Grinnell. Durham, N.H., 1937. 14 p. New Hampshire, agricultural experiment station. Circular 53.

Air Conditioning.

Circulation of air in scale model rooms. By E.C. Lundquist. Heating Piping and Air Conditioning. v. 10, no. 10. October 1938. p. 681-685. Purpose of investigation was not only to find out manner in which air circulated in scale model room for various duct arrangements, but also to show that air distribution was not substantially altered, for any particular duct arrangement, by changing scale of model, if dynamic similarity was maintained.

Controls for air conditioning large, medium and small buildings. By S.F. Nicoll and W.E. Zieber. Refrigerating Engineering. v. 36, no. 1.

Air Conditioning. (Cont'd)

July 1938. p. 27-37. Deals with applications only, and not with design, or method of functioning of individual instruments. Only controls directly concerned with maintaining required air conditions are discussed. No parts of refrigerant or condenser water control are considered except those directly operated by air conditioning control system. Human comfort installations are considered in particular, although principles involved apply also to industrial air conditioning. Although control of heating will necessarily be touched upon, special stress is being placed on cooling. Design of plants and equipment is necessarily inter-related with choice of control systems and will be so discussed. It is not intention of paper to question or justify conditions usually recommended for human comfort but only to discuss means used to obtain them

"Window box" evaporating fan cools air in dry region. Popular Mechanics. v. 70, no. 1. July 1938. p. 17. Can lower indoor temperature as much as twenty to thirty-five degrees. Operates on simple principle of absorption of heat by evaporation of water. Vertical mat made of excelsior or fiber two or three inches thick is placed outside window, and water is allowed to flow downward through mat while fan draws large volume of air through moist mat and into house. Another window properly situated to provide cooling circulation through entire house, is used as outlet. Air delivery of intake fan must provide complete change of air in house every two or three minutes.

Window conditioning. By Earl Aiken. Lumber & Building Material Dealer. v. 7, no. 8. August 1938. p. 4-5.

Alcohol Fuel.

Agrol movement collapses. By E.L. Barringer. National Petroleum News. v. 30, no. 39. September 28, 1938. p. 25-26, 30, 33. Demand in Sioux city now but a shadow of peak sales when agrol plant there was boomed.

Building Construction.

Concrete beams with sheet-steel web plates. By J.T. Thompson, T.F. Hubbard and J.N. Fehrer. Civil Engineering. v. 8, no. 12. December 1938. p. 815-818. Rather radical departure in design of beam reinforcement--substitution of web plates for stirrups--is reported. Tests made thus far indicate that beams with web plates are superior in structural action--and it is shown also that such beams are simpler to construct and offer minor economies in both labor and materials.

Fixed-point theory for continuous beams with elastic supports. By Odd Albert. Civil Engineering. v. 8, no. 12. December 1938. p. 835-838.

Settlement analysis of engineering structures. By A.W. Skempton. Engineering. v. 146, no. 3794. September 30, 1938. p. 403-406.

Building Construction. (Cont'd)

Knowledge of settlements which proposed engineering structure will undergo, both during and after construction, is of importance in design from two main points of view. In first place, owing to differential settlement and resulting secondary stresses, there will be lowering of true factor of safety with time, this being of particular importance in case of modern rigid-frame buildings or arch bridges. Secondly, with such structures as chemical plant or roadway of bridge, it may be desirable to eliminate effects of settlement by making provision so that such movements as occur will do so without causing any harm. In past, foundational design has been considered rather from point of view of safe bearing pressure of soil than from that of settlement of structure, although as some settlement must necessarily occur, correct procedure is obviously to calculate what movements will be and modify design, should they be too great. Settlements can be reasonably estimated by scientific methods developed during last twelve years, largely by Terzaghi and his followers. These replace traditional bearing test, which yields little information on this point, owing to its empirical nature. Great deal of research has still to be carried out, but modern methods of analysis have achieved considerable success and are generally recognized as constituting increasingly important factor in structural design.

Building Materials.

Drama of cement making. Chicago, Portland cement association. 1938. 15 p. Lithographed.

Field for low-heat cement. By H.S. Meissner and W.T. Moran. Engineering News Record. v. 121, no. 19. November 10, 1938. p. 589-593. What has been learned of advantages and limitations of this new product after extensive research and use of 5,000,000 barrels of it in the field.

Permeability of building materials to water vapour. By J.D. Babbitt. Heating, Piping and Air Conditioning. v. 10, no. 11. November 1938. p. 751-755. Brief outline of methods of measuring diffusion coefficient presented. Measurement of diffusion coefficients for various building materials is immediate necessity in order to plan vapour-proof walls on sound principles.

Volume changes in natural and artificial building stones. By D.H. Pletta and J.F. Poulton. Blacksburg, Va., 1938. 14 p. Virginia polytechnic institute. Engineering experiment station series. Bulletin no. 34.

Why the home builder should make sure that the right grades of lumber are used. Lumber & Building Material Dealer. v. 7, no. 8. August 1938. p. 12-13.

Chemistry, Technical

Applications of chemistry. Engineering. v. 146. no. 3794. September 30, 1938. p. 395-396.

Chemistry, Technical (Cont'd)

Chemurgic research laboratories: Editorial. Agricultural Engineering. v. 19, no. 11. November 1938. p. 469-470.

Concrete.

Concrete for the Kanawha river project. By J.C. Sprague. Civil Engineering. v.8, no. 12. December 1938. p. 797-803. Review of design and control procedure employed, with special reference to effect of coarse grinding and tri-calcium content on strength and heat generation.

Corrosion.

Measuring the growth and scale resistance of cast iron. By A.H. Dierker and H.H. Dawson. Columbus, O., 1938. 15 p. Ohio, Engineering experiment station. Bulletin no. 100.

Methods of investigation of surface treatment for corrosion protection of steel. By R.E. Pollard and W.C. Porter. Washington, U.S., Govt. print off. 1938. 10 p. U.S. National bureau of standards. Building materials and structures. Report BMS8.

Cotton.

Changes in technology and labor requirements in crop production. Cotton. by W.C. Holley and L.E. Arnold. Philadelphia, Penna. 1938. 132 p. Processed. Works progress administration. National research project on Reemployment opportunities and recent changes in industrial techniques. Report no. A-7.

Cotton production and distribution: Season of 1937-38. Washington, U.S. Govt. print. off., 1938. 53 p. Processed. U.S. Bureau of the Census. Bulletin 175.

Cotton Machinery.

Cosecha mecanica del algodon. Oro Blanco. v. 2, no. 16. October 1938. p. 18-19. Mechanical harvesting of cotton. Results of an experiment with a cotton picker.

Dairy Farm Equipment.

Care and cleaning of milking machines. By Alexander Hay. 2d ed. London, British rubber publicity association, 1938. 16 p. References. Rubber and agricultural series. Bulletin no. 4.

Care of farm dairy utensils. By C.K. Johns. Ottawa, 1938. 11 p. Dominion of Canada. Department of agriculture. Farmers' bulletin 65.

Electric dairy water heater and utensil sterilizer. By D.G. Ebinger. Michig Agricultural experiment station. Quarterly bulletin. v. 21, no.2. East Lansing, Mich., 1938. p. 93-96.

Dams.

Conformity of design assumptions and actual conditions in masonry dams. By A.V. Karpov. Military Engineer. v. 30, no. 174. November-December 1938. p. 418-421. Conclusions: Necessity of using sound concrete in durable structure is obvious. Necessity of preventing such concrete from deterioration by relieving it from stress concentrations is no less important. Concrete dam, no matter how solid, acts as elastic structure and is one. Variations in conditions, in particular in water elevations of reservoir and temperature changes, are reflected in alternately varying deformations and deflections. In properly designed dam of uniform material, founded on uniform rock, variation in deformations and deflections should have no detrimental effect on structure. Non-uniformities, no matter what are their origin, will result in stress concentrations. Gradual growth of existing cracks and formation of new ones will follow, resulting in more or less rapid deterioration of structure.

Construction of small dams for farm and community use. By E.J. Thomas, J.N. Roherty and H.F. McColly. Fargo, N.Dak., 1937. 20 p. Bibliography. North Dakota agricultural college. Extension service. Circular 154.

Dams; A bibliography of books, periodicals, and society publications. Supplement covering April 1936 through September 1938. Compiled by A.W. Clark. Fort Belvoir, Va., Engineer school, 1938. 110 p.

Design of rock-fill dams: Discussion. By J.D. Galloway. Proceedings. American Society of Civil Engineers. v. 64, no. 9. November 1938. p. 1885-1894.

Economic design of hydraulic-fill dam sections. By H.H. Hatch. Journal of the New England Water Works Association. v. 52, no. 3. September 1938. p. 364-377.

Fort Peck Dam; A list of references compiled in the Library, U.S. Soil conservation service. Washington, D.C., 1938. 6 p. Typewritten.

Low dam at Marshall Ford. By K.B. Keener. Engineering News-Record v. 121, no. 22. December 1, 1938. p. 697-699. Third and largest dam for Colorado river flood control in Texas is so designed that 74 ft. can be added to its height at a later date to increase storage.

"Upside-down" dam cuts floods in middle. Popular Mechanics. v. 70, no. 1. July 1938. p. 88. As result of preliminary tests, Westinghouse Electric and Manufacturing company engineers expect dam will be capable of pumping enough water out of valley every twenty-four hours to fill large city block to height of 648 feet. Effectiveness of dam depends upon its three giant vertical pumps to keep flood waters of Turtle Creek flowing downstream, while two massive steel gates shut out water of Monongahela river as it strives to back up from the Ohio river.

Diesel Engines.

Development of the diesel engine. Indian Engineering. v. 104, no.3. September 1938. p. 97, 99. Survey of forty years.

Diesel engine maintenance. By E.R, Spicer. Power Plant Engineering. v. 42, no. 11. November 1938. p. 704-706. Details of an inspection and repair schedule to insure a thorough inspection and suggestions for maintenance standardization.

Drainage.

Draining and leaching Treasure Island. By C.H. Lee. Engineering News Record. v. 121, no. 15. October 13, 1938. p. 462-463. Fill of salty soil was made suitable for trees and gardens by pumping from wells and leaching with fresh water.

Outlet problem in farm drainage. By H.B. Roe. St. Paul, Minn., 1938. 1 p. University of Minnesota. Agricultural engineering news letter no. 80.

Drying (Crops)

Automatic super-heated steam grass drier. Implement and Machinery Review. v. 64, no. 762. October 1, 1938. p. 585-586. Process is invention of R.G. Carr, The Globe, Irthington, Carlisle, and consists, briefly, of super-heating, steam, i.e., raising it to temperature in excess of boiling-point, whereby it becomes "dried" and assumes, for all practicable purposes, properties of gas. Grass, which is first of all delivered from field and tipped alongside trough conveyor, and then transferred to plant without intermediate manual handling, first passes through set of crushing and chopping gears, which masticate it, and at same time prevent intrusion of free moisture to next stage of process. These gears are of "herring bone" design, with special teeth which shear grass and press it gently but firmly between tops and bottoms of alternate teeth, helical tooth angle allowing moisture to flow laterally, while "line" contact prevents free moisture from passing forward between teeth to delivery side of gears. Crushing action is positive, without rubbing, and designed not to damage grass, so retaining as many of ingredients as possible.

From gears, grass is spread evenly upon mesh conveyor, which carries it through pre-heating chamber. Here, exhausted drying steam and large additional volume of steam created by evaporation are brought from drying chamber proper to scrub cold grass thoroughly and, by condensing upon it, raise its temperature.

Hot grass and condensate then enter second crusher, where, with gears of same design, it goes through similar process to that experienced on first occasion. Thence it is spread on conveyor and carried through drier proper. Super-heated steam is blown in below this conveyor and passing through grass, agitates and dries it. Particles of crushed grass are blown upwards, while any lumps from crusher pass against rotary tedder, which "teasels" them out and throws them back down the conveyor.

Drying (Crops) (Cont'd)

Blast escapes upwards and carries with it particles of dried and semi-dried grass. But in path of blast a second conveyor is interposed, on underside of which particles of grass are deposited and supported by blast, thus forming an "inverted mattress" in path of super-heated steam.

Mattress is broken up by being blown over end of conveyor into upper chamber, but as blast is of lesser intensity here, upper and lower surfaces of both conveyors are used to move grass towards the exit. Before grass finally falls by gravity into chute, however, it has to pass control area, whose object is to ensure fully dried product.

Crop drying, with special reference to cereal and forage crops. References covering the period 1933 - August 1937. South Kensington, London, 1937. 8 p. Mimeographed. Science Museum. Science library bibliographical series no. 347.

Principles and methods involved in dehydration of apples. By C.C. Eidt. Ottawa, 1938. 36 p. Dominion of Canada. Department of agriculture. Technical bulletin 18.

Electric Service.

Supply of energy for household purposes in the United States. By C.W. Kellogg. Edison Electric Institute Bulletin. v. 6, no. 9. September 1938. p. 385-394. Part I.

Electric Wiring.

Wiring farm buildings for electricity. American Agriculturist. v. 135, no. 19. September 10, 1938. p. 527, 534.

Electricity on the Farm.

Dairying with electricity. By S.A.Witzel. Hoard's Dairyman. v. 83, no. 18. September 25, 1938. p. 461, 473.

Electric service for the farmstead. By J.B. Kelley, I.C. Hagman and E.G. Welch. Lexington, Ky., 1938. 46 p. University of Kentucky. College of agriculture. Extension division. Circular no. 311.

Farm electricity for 4-H clubs; Second year. By D.G. Ebinger. East Lansing, Mich., 1938. 15 p. Michigan state college Extension division. Club bulletin 37.

Progress of farm electrification in the Tennessee Valley. By C.J. Hurd. Agricultural Engineering. v. 19, no. 11. November 1938. p. 493-495.

Rural electrification. By W.H. Marple. In 21st annual report of the Department of agriculture. Illinois. July 1, 1937 to June 30, 1938. p. 23-29.

Erosion Control.

Bibliography on soil erosion and soil and water conservation. Compiled by S.H. Gaines. Washington, D.C., 1938. 651 p. U.S. Department of agriculture. Miscellaneous publication no. 312.

Erosion and drainage. By J.F. Relf. Soil Conservation. v. 4, no. 5. November 1938. p. 112-114. Drainage consists essentially in direct removal of surface and ground water from soil. An open channel, whether neutral or artificial, provides free passage for surface and ground water. Hence, gully or road ditch is simply means of aiding gravity in removing run-off and stored ground water. Free passage of ground water into gully (subdrainage) may lower water table or deplete supply stored in soil to extent that vegetation will suffer during dry seasons.

Native woody plants of the United States: Their erosion-control and wildlife values. By W.R. Van Dersal. Washington, U.S. govt. print. off., 1938. 362 p. U.S. Department of agriculture. Miscellaneous publication no. 303.

1937 state legislation for control of soil erosion. Journal of land & public utility economics. v. 12, no. 2. May 1938. p. 210-217.

Soil conservation districts; How farmers can organize them; How they help control erosion. Madison, Wis., 1938. 21 p. University of Wisconsin. College of agriculture. Extension service. Circular 290.

Soil defense in the Northeast. By G.K. Rule. Washington, U.S. Govt. print. off., 1938. 70 p. U.S. Department of agriculture. Farmers' bulletin no. 1810.

Soil drifting. In report of the Dominion experimental substation, Regina, Sask., 1931 to 1936. Dominion of Canada. Department of agriculture. Dominion experimental farms. Ottawa. 1938. p. 7-12.

Farm Buildings.

Extension bulletins on farm buildings - Northeastern states. Compiled by S.P. Lyle. Washington, D.C., 1938. 12 p. Mimeographed. U.S. Department of agriculture. Miscellaneous extension publication no. 46.

List of farm building plans. St. Paul, Minn., 1938. 8 p. University of Minnesota. Agricultural extension division. Circular 59.

Milksheds of New Hampshire. By Alan MacLeod. Durham, N.H., 1937. 11 p. New Hampshire agricultural experiment station. Bulletin 295. Study of their characteristics and relationships.

Smoke houses. By R.W. Snyder and M.R. Bentley. College Station, Tex., 1935. 4 p. Mimeographed. Texas agricultural and mechanical college of Texas. Cooperative extension work in agricultural and home economics. Farm and home hints. no. 329.

Farm Machinery - Housing.

Winter protection for farm machinery paying investment. University of Idaho. College of agriculture. News Letter. v. 21, no. 7. November 1938. p. 4.

Farm Machinery and Equipment.

Autumn cultivation. Rural Electrification & Electro-Farming. v. 14, no. 161. October 1938. p. 84-85. Farm machinery assists speed and economical working.

Big machines for big precision farm jobs. By B.L. Hagglund. Agricultural Engineering. v. 19, no. 11. November 1938. p. 483-484.

Cultural methods and equipment for corn production. In report on agricultural research for the year ending June 30, 1938. Part II. Iowa corn research institute. Third annual report. Iowa agricultural experiment station. Ames, Iowa, 1938. p. 19-29.

Dealers' sales, margins, overhead and profits. Farm Implement News. v. 59, no. 24. December 1, 1938. p. 20-21. As reported by the Federal trade commission for the years 1929-1936.

Effect of the "Gyrotiller" on crop yield. By F.H. Garner and H.G. Sanders. Journal of Agricultural Science. v. 28, part 3. July 1938. p. 401-417. References.

Farm implement data in current census reports. Farm Implement News. v. 59, no. 24. December 1, 1938. p. 22. Report covers data received from manufacturers of other farm equipment and related products listed in Bureau's annual report of farm equipment production and sales. It also excludes every implement and tractor concern having an annual volume of less then $5,000.

Farm machinery review. By F.H. Slade. Rural Electrification and Electro-Farming. v. 14, no. 161. October 1938. p. 88-89. Grain and seed dresser. Bracken cutting.

French views on powor farming. Implement and Machinery Review. v. 64, no. 763. November 1, 1938. p. 696-698. Tillage advantages -- tractor developments -- fuel and other problems.

Grinding the farm tools. By L.M. Roehl. Lincoln, Neb., 1938. 36 p. University of Nebraska. Agricultural college extension service. Extension circular 702. (Reprint of a bulletin originally prepared for and published by the New York State college of agriculture, Cornell university, Ithaca, N.Y.)

Improved combine harvester for flax. By C.L. Keagle. California Cultivator. v. 85, no. 23. November 5, 1938. p. 688.

Mechanical bait spreader. By O.S. Bare and D.E. Eckhoff. Lincoln, Neb., 1938. 3 p. Mimeographed. Nebraska cooperative extension work in agriculture and home economics. Extension circular 1513.

Farm Machinery and Equipment. (Cont'd)

Minnesota seed grain treater. By M.B. Moore. Washington, D.C., 1938. 6 p. U.S. Department of agriculture. Miscellaneous publication. no. 330.

Motoculture 1938. Genie Rural & l'Electricite Rurale. v. 31. September 1938. p. 25-33.

New one-row corn picker. Northwest Farm Equipment Journal. v. 52, no. 11. November 1938. p. 34. Because of its size, light weight, and low cost, new corn picker is practical machine for man who has 30 or more acres year to harvest. Entire picker mechanism is operated through power take-off shaft of tractor, assuring smooth, ample power for all working conditions. Main drive shaft is equipped with universal joints and safety slip clutch which protects entire picker mechanism. Transmission gears are fully enclosed and run in oil.

Odd pineapple harvester speeds field work. Popular Mechanics. v. 70, no. 3. September 1938. p. 401. Carrier is powered by eight horsepower engine and is equipped with four wheels on which are mounted nine-inch soft balloon tires. Power is applied through single drive wheel which extends out in front so that it may follow middle of interrow.

Power machinery effects on management and on costs of potato farming in New Jersey. By J.W. Carncross, A.G. Waller, and Emil Rauchenstein. New Brunswick, N.J., 1938. 59 p. New Jersey agricultural experiment station. Bulletin 649.

Simple head thresher. Journal of the American Society of Agronomy. v. 30, no. 9. September 1938. p. 787-788. Describes construction and operation of cheap and efficient device designed for single-head threshing.

"Slip-on" plowshare edge sharpens self with use. Popular Mechanics. v. 70, no. 1. July 1938. p. 95. "Slip-on" edge of durable steel is available to fit over any general purpose plowshare. Edge stays sharp until worn out, its design making blade self-sharpening with use. It tightens with use, and will not pull loose even when backing.

Special sugar beet production machinery. By S.W. McBirney. Agricultural Engineering. v. 19, no. 11. p. 481-482, 484.

Farm Plan.

Efficient field planning the sign of good management. By O.A. Brock. Better Farm Equipment and Methods. v. 11, no. 3. November 1938. p. 6-7. Rotation system, with disease-free animals grazing on legume pastures, offers a practical answer to the farmers' soil problems.

Fences, Electric

Bibliography on electric fencing. Compiled by D.W. Graf. Washington, D.C., 1938. 3 p. Mimeographed. U.S. Department of agriculture. Bureau of agricultural engineering.

Four dry cells operate this electric fence controller. By M.N. Beitman. Popular Mechanics. v. 70, no. 3. September 1938. p. 418-419, 130A.

Fertilizer Placement.

Machines aid farmers in adopting new fertilizer practice. G.A. Cumings. Implement Record. v. 35, no. 10. October 1938. p. 25. Increased effectiveness of fertilizer placed in bands to side of seeds or plants and at proper depth has led some people to believe that method of application is fully as important as fertilizer itself. Chief advantages of side placement of fertilizer: elimination of early injurious effects of fertilizer on seedlings and transplants and localization of plant food where it is readily available to plant. Best distance between fertilizer bands and plant or seed has varied somewhat with different crops and soil conditions.

Fertilizers.

Commercial fertilizers; Report for 1938. By E.M. Bailey. New Haven, Conn., 1938. 56 p. Connecticut agricultural experiment station. Bulletin 417.

Fertilizer prices and price indexes. By Herbert Willett. Washington, D.C., National fertilizer association, 1938. 32 p. Processed.

Fertilizers for white pea beans. By C.E. Millar, R.L. Cook and J.F. Davis. East Lansing, Mich., 1938. 45 p. Michigan Agricultural experiment station. Special bulletin 296.

Home mixing of fertilizers. By C.C. Fletcher. Washington, U.S. Govt. print. off., 1938. 8 p. U.S. Department of agriculture. Leaflet no. 70. (Issued 1930; revised 1938).

Manure, a profitable by-product. By J.L. Haddock. Durham, N.H., 1937. 4 p. University of New Hampshire extension service. Extension circular 198.

Verslag van het groenbemestingsproefveld 1937. By K. De Haan. Nederland, Instituut voor suikerbietenteelt bergen op zoom, 1938. Reprint from Mededeelingen van het instituut voor suikerbietenteelt. v. 8, no. 8. p. 213-224. An account of experiments with green fertilizer in 1937.

Fire Protection.

Farms on fire. By Alwyn Knight. Capper's Farmer. v. 49, no. 11. November 1938. p. 40, 54.

Fire Protection. (Cont'd)

Let's prevent farm fires. By M. Farley, Jr. Michigan Farmer. v. 190, no. 8. October 8, 1938. p. 151, 162.

Save the farm. Electricity on the Farm. v. 11, no. 10. October 1938. p. 11, 20. Millions of dollars worth of farm property are destroyed by fire each year, and much of loss might be prevented.

Street flusher does extra duty fighting farm fires. Popular Mechanics. v. 70, no. 3. September 1938. p. 342. To help protect farms from fire, street flusher truck built for rural communities doubles as fire truck, carrying water, hose and pumping equipment. With tank, varying up to 3,000 gallons capacity, kept always full of water, truck is ready to speed to farm fire and throw water immediately. Flusher pump can be used to discharge water or to pump it from cistern or creek.

Flax.

Flax production in Kansas. By F.E. Davidson and H.H. Laude. Manhattan, Kansas, 1938. 14 p. Kansas state college of agriculture. Agricultural experiment station. Circular 191

Floods and Flood Control.

Cutoffs lower flood crests. By G.R. Clemens. Engineering News Record. v. 121, no. 20. November 17, 1938. p. 608-614. Fifteen cutoffs are rapidly redistributing the flow of the Mississippi River and have materially lowered flood crests above Red River Landing.

Effects of Mississippi river cut-offs. By H.B. Ferguson. Civil Engineering. v. 8, no. 12. p. 826-829. Gives detailed factual data on changes. Paper is of special significance as first detailed account released for publication by the man who instigated cut-off program and originated corrective dredging technique that has been suchaa potent factor in its success.

Southern New York flood control project. By G.J. Nold. Civil Engineering. v. 8, no. 12. December 1938. p. 830-832. Variety of works required to protect cities of upper Susquehanna basin; models aid design.

Flow of Water.

Conic determination of hydraulic flow. By E.A.W. Phillips. Indian Engineering. v. 104, no. 3. September 1938. p. 101-107.

Flow and resistance to flow of water. By A.R. Thomas. Indian Engineering. v. 104, no. 4. October 1938. p. 124-127. Article is intended to present briefly qualitative picture of resistance to flow of water in its various forms, to assist understanding of this complex subject.

Pressure losses for fluid flow in 90° pipe bends. By K. Hilding Beij. Washington, D.C., 1938. 18 p. National bureau of standards. Research paper RP1110.

Forage Crops.

Composition and apparent digestibility of pea silage, sun cured pea vines and artificially dried pea vines. By R.E. Hodgson and J.C. Knott. Pullman, Wash., 1938. 12 p. "Literature cited" p.12. State college of Washington. Agricultural experiment station. Bulletin no. 364.

Further investigations in chopping alfalfa hay at the time of storage. By J.B. Shepherd and T.E. Woodward. Journal of Dairy Science. v. 21, no. 2. February 1938. p. 89-96. References, p. 96.

Frost Protection.

Rootstock influence on the composition of citrus fruits. By R.W. Hodgson and E.R. Eggers. California Citrograph. v. 23, no. 12. October 1938. p. 490, 531. Bibliography. Explains in clear terms principles of frost protection.

Grain -- Moisture Content.

Moisture--enemy of seed corn. By J.W. Stevenson. Purdue Agriculturist. v. 33, no. 2. November 1938. p. 5, 8. Brief summary of following. 1. Bin drier. 2. Slatted floor drier. 3. Wire rack drier. 4. Nail and shuck dried with alterations.

Hay Handling.

Better hay practices under the New Hampshire agriculturist conservation program for 1937. Durham, N.H., 1937. 4 p. University of New Hampshire extension service. Extension circular 197.

History of modern hay making. Oscar Erf. Farmers' Digest. v. 2, no. 5. September 1938. p. 49-57.

Heating.

Best investment we ever made a coal stoker. By Arlen Marsh. Electricity on the Farm. v. 11, no. 11. November 1938. p. 10-11. Electric stokers fire the furnace, hold even temperatures, insure better combustion and save coal. Types for soft and hard coal.

Check list for heating servicing. By A.G. Canar. Heating and Ventilating. v. 35, no. 10. October 1938. p. 22-25.

Electric heating for the farm home. Rural Electrification and Electro-Farming. v. 14, no. 161. October 1938. p. 90-91. Some important considerations of cost and other matters.

Oil burners. By Kalman Steiner. New York, McGraw-Hill book company, inc., 1937. 436 p.

Oil fuels and burners with special reference to automatic domestic types. By J.A. Moyer. New York, McGraw-Hill book company, inc., 1937. 375 p.

Heating. (Cont'd)

Performance of stoker-fired and hand-fired warm-air furnaces in the Research Residence. By A. E. Kratz, S. Konzo and R.B. Engdahl. Heating, Piping and Air Conditioning. v. 10, no. 11. November 1938. p. 732-742. Investigations in forced-air heating in Research Residence at University of Illinois during period from 1932 to 1934 were confined to studies of characteristics of forced-air heating system under actual service conditions. For these investigations fuel used was anthracite. During period from 1934 to 1937 performance and operating characteristics were determined of warm-air furnace equipped with conversion oil-burning unit and of warm-air furnace designed specifically for oil firing. During heating season of 1937-38, these investigations were extended to include comparison of performance and operating characteristics of thermostatically-controlled hand-fired, warm-air furnace burning high volatile bituminous coal, with those of same furnace fired by means of domestic stoker, of underfeed type. In order to obtain comparable data no changes were made in furnace itself, in plant, in volume of air circulated, not in settings of thermostat when stoker was substituted for hand firing. Furthermore, in each case, coal from same mine and of size usually recommended for particular method of firing was used.

Seasonal variations in effective temperature requirements. By F.E. Giesecke and W.H. Badgett. Heating, Piping and Air Conditioning. v. 10, no. 10. October 1938. p. 677-680.

Study of the heat requirements of a single-glazed test house and a double-glazed test house. By M.L. Carr and others. Heating, Piping and Air Conditioning. v. 10, no. 11. November 1938. p. 745-750. Paper reported results of study of relative heat requirements necessary to maintain temperature of 70 °F in each of two similarly constructed test houses, one having single and other double-glazed windows. Investigation was planned and carried out by Pittsburgh Plate Glass Co. with aid and counsel of Pittsburgh Testing laboratory during period January 18 to April 22, 1933.

Houses.

Business recovery and the housing program in Great Britain. By Harold Bellman. Journal of land and public utility economics. v. 14, no. 2. May 1938. p. 111-119.

Housing in Great Britain. By O.W. Roskill. Engineering News Record. v. 121, no. 19. November 10, 1938. p. 582-585. Despite the notable volume of work, there are difficulties with jerrybuilding, high costs, poor planning, and a lack of accommodations for the low-income group.

Housing research: National bureau of standards. Mechanical Engineering. v. 60 no. 10. October 1938. p. 771-772. General objective is stated as follows: To furnish to government agencies, building industry, and public technical information from every available source on engineering properties of building materials as incorporated structural elements and equipment of house, with particular reference to low cost

Houses. (Cont'd)

housing, and including new materials, equipment, and methods of construction as well as those already in use. Program will include elements suitable for detached houses; row houses, and low-cost apartment houses; it will include new as well as conventional constructions; and to restrict it to constructions and equipment suitable for low-cost house, maximum cost has been fixed for each element.

Problem of a housing enforcement program. By L.M. Graves and A.H. Fletcher. Journal of land & public utility economics. v. 14, no. 2. May 1938. p. 182-190.

Hydraulics.

Fluid mechanics for hydraulic engineers. By Hunter Rouse. New York. McGraw-Hill book company, inc., 1938. 422 p.

Observed effects of geometric distortion in hydraulic models; Discussion. By E.H. Taylor. Proceedings. American Society of Civil Engineers. v. 64, no. 9. November 1938. p. 1899-1901.

Personnel factor in model analyses of hydraulic problems. By P.W. Thompson. Military Engineer. v. 30, no. 174. November-December 1938. p. 422-424.

Hydrology.

Hydrological studies on the Yangtze river, China. II. A theory of silt transportation by running water. By Shoitiro Hayami. Separate print no. 9, Journal of the Shanghai science institute. Section I. vol. I (p. 175-198) July 1938.

Inventory of unpublished hydrologic data. By W.T. Holland and C.S. Jarvis. Washington, U.S. Govt. print. off., 1938. 77 p. U.S. Geological survey. Water-supply paper 837.

Insect Control.

Energy requirements and safety features of electric insect traps. By J.R. Tavernetti and J.K. Ellsworth. Agricultural Engineering. v. 19, no. 11. November 1938. p. 485-486, 490. Before definite conclusions can be drawn, further experiments should be conducted with very small insect such as grape leafhopper, which has wing spread of less than 1/8 in. and some other insects such as hard-shelled beetles and large moths.

Grasshoppers and their control. By A.G. Ruggles and T.L. Aamodt. St. Paul, Minn., 1938. 16 p. University of Minnesota. Agricultural extension division. Special bulletin 194.

Lewallen poison bait spreader. By O.S. Bare. Lincoln, Neb., 1938. 4 p. Mimeographed. Nebraska cooperative extension work in agriculture and home economics. Extension circular 1514.

Insect Control. (Cont'd)

Use of selenium in sprays for the control of mites on citrus and grapes. By W.M. Hoskins, A.M. Boyce and J.F. Laminan. Hilgardia. v. 12, no. 2. November 1938. p. 115-175. Bibliography.

Insulation.

Brick house sawed in two to insulate against damp. Popular Mechanics. v. 70, no. 1. July 1938. p. 96. Crosscut saw was used to saw out mortar between two layers of bricks near ground, and sheet copper was inserted in joints for insulation.

How mineral-wool-filled partitions respond to fire-resistance tests. Industrial Standardization. v. 9, no. 11. November 1938. p. 257-259. National Bureau of standards uses American standard specifications for fire tests to determine relative value of different methods of filling wood partitions with mineral-wool for fire protection.

Irrigation.

Cultural experiments with yellow Bermuda onions under irrigation. By L.R. Hawthorn. College Station, Tex., 1938. 30 p. Literature cited, p. 29-30. Texas agricultural experiment station. Bulletin no. 561.

Irrigation and water supply development in Victoria. State rivers and water supply commission of Victoria. Melbourne, H.J. Green, govt. printer, 1937. 35 p.

Irrigation structures and equipment. By I.D. Wood. Lincoln, Neb., 1938. 18 p. Mimeographed. Nebraska cooperative extension work in agriculture and home economics. Extension circular 757 revised.

Modern irrigation is big-scale business. Oregon Farmer. v. 61, no. 18. September 1, 1938. p. 454.

National irrigation development. Address on Central valley project before 54th annual meeting of the Tulare Chamber of commerce. By W.R. Young. New Agriculture. v. 21, no. 1. October 1938. p. 9.

Pump irrigation. By I.D. Wood. Lincoln, Neb., 1937. 13 p. Mimeographed. Nebraska. Cooperative extension work in agriculture and home economics. Extension circular 754, rev.

Land Utilization.

Report on water and land use programs in the Northern great plains. Northern Great Plains Committee. Omaha, Neb., 1938. 12 p. Mimeographed.

Lighting.

And now--lights all year 'round. By M.S. Shoop. Electricity on the Farm. v. 11, no. 12. December 1938. p. 15-16. Discusses lights

Lighting. (Cont'd)

for more eggs - for better chicks - for bigger broilers. Brooder houses without windows. Sun porches.

Engineering aspects of direct lighting. Part I - Louvered systems. By J.M. Ketch and G.R. LaWall. Transactions of the Illuminating Engineering Society. v. 33, no. 6. June 1938. p. 545-565. Results of tests on the efficiency, light distribution and brightness of a series of louvered direct-lighting equipments.

Farm lighting goes to town. By M.M. Lynch. Electricity on the Farm. v. 11, no. 10. October 1938. p. 7-8, 20.

"Side kickers" for the moon. By Wallace George. Electricity on the Farm. v. 11, no. 12. December 1938. p. 13-14, 27.

Using artificial lights. By R.A. Conolly. Michigan Farmer. v. 190, no. 7. September 24, 1938. p. 141.

Lubrication.

Problem of lubrication. California Cultivator. v. 85, no. 21. October 8, 1938. p. 603, 619.

Milk Cooling.

Care of cream for buttermaking. Ottawa, 1938. 9 p. Dominion of Canada. Department of agriculture. Farmers' bulletin 66.

Evaluation of several methods of cooling cream. By W.J. Caufield and W.H. Martin. Journal of Dairy Science. v. 21, no. 1. January 1938. p. 13-20. Purpose of investigation was to determine relative merits and also limitations of some of the more commonly used methods of cooling cream including: (1) placing cans of cream in refrigerator, (2) partially submerging cans in water, (3) allowing water to flow over outside of the can, (4) using spray, and (5) using evaporation. In addition, effectiveness of evaporation method of cooling sweet and sour cream through wide range of atmospheric temperatures and humidities was determined. Results obtained in this study may be summarized as follows: 1. Rate of cooling during first two hours of trial was fastest by submerged method, followed in order by flooded, refrigerator, spray, and evaporation methods of cooling. 2. Sour cream, irrespective of cooling method, did not cool so rapidly nor to quite so low a temperature as did sweet cream. 3. It required about six hours for either sweet or sour cream to reach lowest attainable temperature under given set of conditions, when cooled by evaporation method. 4. Temperature to which cream may be cooled by evaporation method was definitely limited by temperature and humidity of room. 5. If relative humidity is held rather constant, fluctuations in room temperature tend to be accompanied by corresponding changes in temperature of cream, but with some lag in time when evaporation process is used for cooling. 6. Efficiency of evaporation system of cooling was impaired when relative humidity exceeded 60 percent. 7. Evaporation method retarded rate of

Milk Cooling. (Cont'd)

temperature rise in cooled cream and prevented temperature of cream from going above that attainable by this system of cooling.

Miscellaneous.

Analysis of 70,000 rural rehabilitation families. By E.L. Kirkpatrick. Washington, D.C., 1938. 93 p. Mimeographed. U.S. Department of agriculture. Farm security administration. Social research report no. IX.

Critique of the federal power act. By L.V. Plum. Journal of land and public utility economics. v. 14, no. 2. May 1938. p. 147-161.

Engineers sponsor school in industry. Better Farm Equipment and Methods. v. 11, no. 2. October 1938. p. 8-9. Main purpose of school was to give college men insight into various departments of implement companies and opportunity to form their own opinions as to service rendered, and manner in which it is performed, by farm equipment industry for civilization in general and agriculture in particular. It was mentioned in course of school that whole purpose and justification for farm equipment industry and for agricultural engineers in both public service and industrial employment, is to help farmers. As to methods, it was pointed out that by improved understanding and cooperation between industry and college agricultural engineers their service to farmers could be improved in several ways, such as (1) by college men knowing how farm equipment manufacturers are organized and how they conduct their business; (2) by students learning training, personality, and performance requirements for employment and advancement as agricultural engineers in industry; (3) by men in industries getting better acquainted with ideas, viewpoints, and personalities of college men; (4) by helping teachers of power and machinery subjects to be better informed; and (5) by other incidental benefits of mutual acquaintance.

Officials and organizations concerned with wildlife protection, 1938. Compiled by F.G. Grimes. Washington, D.C., 1938. 15 p. U.S. Department of agriculture. Miscellaneous publication no. 329.

World natural resources. By F.E. Lathe. Science. v. 88. no. 2285. October 14, 1938. p. 337-344. Reviews briefly fundamental resources that nature has placed at man's disposal; subsequently, at somewhat greater length, adequacy or inadequacy of those resources to provide requisites for food, clothing, shelter; heat and power.

Motor Fuel.

Wood-burner drives a car 100 miles for half dollar. Popular Mechanics. v. 70, no. 1. July 1938. p. 79. Instead of trunk rack, French minister of agriculture has boiler rack on his wood-burning automobile. Because of high cost of gasoline in Europe, manufacturers are constantly experimenting with other fuels, such as wood, charcoal and coal. This car travels 100 miles on fuel costing fifty cents, and is said to be capable of same speed as gasoline cars.

Motors, Electric

Motors for fan drives. By C.C. Hermann. Southern Power Journal. v. 56, no. 12. December 1938. p. 62-63. Reviews briefly proper type of electric motor for each duty of air conditioning apparatus.

When you need small motors. By Martin Schiff. Factory Management and Maintenance. v. 96, no. 9. September 1938. p. 76-77, 118.

Pipes and Piping.

Manning formula table for the solution of pipe problems. By H.W. King. New York, McGraw-Hill book company, inc., 1937. 351 p.

Use the new American pipe standard. By H.H. Morgan and Sabin Crocker. v. 10, no. 10. October 1938. p. 634-642. Brings schedule number system to attention of piping trade in general in such manner as to expedite its universal use. It is hoped that those responsible for ordering pipe will initiate practice of specifying what they want by diameter and schedule number.

Potatoes.

Costs and returns in producting potatoes in central Maine. By W.E. Schrumpf. Orono, Me., 1938. 34 p. University of Maine. Agricultural experiment station. Bulletin 392.

Pumps and Pumping.

Deep well pumping plants. Report of the Kansas State board of agriculture. Division of water resources. For the quarter ending September, 1938. Topeka, Kansas, 1938. 24 p. Contains results of tests, with special attention to fuel consumption.

Rain-fall and Run-off.

Analysis of run-off characteristics. By O.H. Meyer. Proceedings. American Society of Civil Engineers. v. 64, no. 9. November 1938. p. 1769-1786. Analysis of characteristics of run-off hydrographs is outlined in this paper, which proposes revision of current methods for determination of stream flow from rainfall. It is shown that continuous rain of constant intensity produces hydrograph of characteristic shape for any drainage area, and that this shape and length of time until run off becomes constant (time of concentration) are functions of shape and size of drainage area. Method of constructing hydrograph resulting from rain of duration less than time of concentration is proposed. Based on this analysis, methods have been devised for determining hydrographs for areas lacking in run-off records, from records of other areas similar in characteristics but different in size, and for construction from rainfall data of hydrographs for storms or series of storms of varying intensity.

Run-off from small drainage basins. By D.B. Krimgold. Agricultural Engineering. v. 19, no. 10. October 1938. p. 439-446. References.

Reclamation.

Notes on waterlogging and land reclamation in the form of a questionnaire. Simla, 1938. 41 p. India. Central board of irrigation. Publication no. 17.

Refrigeration.

Estimating refrigerating loads. By N.R. Sparks. Southern Power Journal. v. 56, no. 11. November 1938. p. 30-33. Elementary rules are given and methods of calculating loads and refrigeration losses for cold storage are explained.

Lateral earth and concrete pressures: Discussion. By A.E. Cummings. Proceedings. American Society of Civil Engineers. v. 64, no. 9. November 1938. p. 1915-1918.

Refrigeration on Cars, Trucks, etc.

Body icing in transit refrigeration of vegetables. By E.D. Mallison and W.T. Pentzer. Washington, U.S. Govt. print. off., 1938. 42 p. U.S. Department of agriculture. Technical bulletin no. 627.

Transport von verderblichen lebensmitteln unter besonderer berucksichtigung der anwendung von kuhlbehaltern. By R. Heiss. Kalte Industrie v. 35, no. 9. September 1938. p. 99-105. Transportation of perishable foodstuffs with special consideration of the use of refrigerated containers.

Refrigerator Lockers.

Cold storage lockers. By R.J. Eggert. Hoard's Dairyman. v. 83, no. 19. October 19, 1938. p. 482.

Cold storage lockers. By P.E. Thomas. Ice and Cold Storage. v. 41, no. 487. October 1938. p. 168.

Cooperative meat plant. By G.H. Watson. Refrigerating Engineering. v. 36, no. 6. December 1938. p. 381-382, 393. New refrigeration development for farm products.

Proposed organization forms for refrigerated food storage locker associations. By L.B. Mann. Washington, D.C., 1938. 36 p. Mimeographed. U.S. Farm credit administration. Research division. Miscellaneous report no. 16.

Storage of fruits and vegetables in community freezer lockers. By H.C. Diehl and M. Birdseye. Washington, D.C., 1938. 35 p. Mimeographed. U.S. Department of agriculture. Miscellaneous extension publication 47.

Research.

Agricultural engineering research--A cooperative activity. By B.D. Moses. Agricultural Engineering. v. 19, no. 11. November 1938. p. 491-492.

Research. (Cont'd)

Agricultural engineering is not fundamentally agricultural, but its usefulness lies in application of engineering principles to farm and farm home.

Index of research projects. v. 1. Washington, D.C., Works progress administration 1938. 291 p.

Place of research in agricultural policy. By O.B. Jesness. C.S.T.A. Review. no. 14. September 1937. p. 255-263. Place of research worker in scheme of things is to find out what facts are and to make them known for the guidance of planner and public. If he is to serve this function he must keep an open mind and arrive at conclusions through careful, conscientious analysis and study. Then he must remain free to give full expression to his conclusions. Only if those conditions continue will voice of research command respect and attention in future evolution of agricultural policy.

Program of research in land economics. By William Allen. C.S.T.A. Review. no. 14. September 1937. p. 264-275.

Three centuries of structural analysis. By S.C. Hollister. Civil Engineering. v. 8, no. 12. December 1938. p. 822-825. Bibliography.

Roofs.

Two ways to make a silo roof. By I.W. Dickerson. Oregon Farmer. v. 61, no. 18. September 1, 1938. p. 460. Gives scale drawings.

Rubber.

Crude rubber industry opens office in Washington. Farm Implement News. v. 59, no. 22. November 3, 1938. p. 33. Crude rubber development bureau is to carry out program in United States similar to that which has been developed by British Rubber Publicity Association during past year in England and Empire countries, in which use of rubber in agriculture is prominently featured. For first year of its operation, in fact, new Bureau aims to concentrate its activities almost exclusively in agricultural field.

Synthetic substances with rubber like properties. By E.R. Bridgwater. Mechanical Engineering. v. 60, no. 10. October 1938. p. 735-737. Bibliography. It has been pointed out that products included in broad terms "synthetic rubbers" and "synthetic rubber-like materials" have little in common except ability to stretch to several times their initial length before breaking. In fact, there is less similarity between some of these synthetic products and others than there is between some of them and natural rubber. Moreover, properties of some of these synthetic products may be varied over such a wide range by compounding with other ingredient and vulcanizing under varying conditions that it is unsafe to generalize about any of them. Difficulty

Rubber. (Cont'd)

of drawing valid generalizations is further complicated by fact that such terms as "oil resistance," "abrasion resistance," and "heat resistance" are devoid of excat meaning, and, if valid conclusions are to be drawn regarding these or any other physical properties, methods of measuring those properties must be exactly defined. Only way to ascertain whether rubber-like synthetic product will be suitable for specific use is to analyze conditions of service, prepare composition whose properties approach as closely as possible ideal revealed by that analysis, and test that composition under conditions related as closely as possible to those that may be encountered in service. It will probably never be possible to tabulate properties of rubber-like synthetics in so comprehensive manner that engineer will be able to select right product for any particular use by consulting handbook. Any general tables of properties that may be prepared would be so misleading as to do more harm than good. Engineer who would use rubber or rubber-like synthetics wisely accept these facts and work within the limitations imposed by them.

Sewage and Sewage Fisposal.

American sewerage practice. v. 3. Disposal of sewage. By Leonard Metcalf and H.P. Eddy. erd ed. New York. McGraw-Hill book company, inc., 1935. 892 p.

Silos.

Silage, silos, and silage crops. By I.J. Smuts. Pretoria, 1938. 36 p. Union of South Africa. Department of agriculture and forestry. Extension series no. 19. Bulletin no. 181.

Soil Moisture.

Capillary conductivity of peat soils at different capillary tensions. By B.D. Wilson and Sterling J. Richards. Journal of the American Society of Agronomy. v. 30, no. 7. July 1938. p. 583-588. In present report capillary conductivity values are recorded for four other peat soils under varying conditions of moisture. Moisture conditions of soils are expressed in terms of capillary tension. Embodied in report is comparison of values obtained for peat soils used in this investigation with values reported by Richards for three mineral soils of different textures.

Keep that watershed cover. Arizona Producer. v. 17, no. 16. November 1, 1938. p. 8. Any attempt to increase water yield from watersheds such as one above Roosevelt dam, through reducing vegetation, must be regarded as "very dangerous". Even if it should have that result--which is extremely doubtful--there would be other undesirable effects. Nor is there any evidence that stream flow is decreased by controlling surface run-off with check dams, water-spreading dikes, and similar measures which check erosion, promote vegetative growth, and get more water down into the subsoil where it is safe from evaporation.

Soil Moisture. (Cont'd)

Water control in the peat soils of Florida. By B.S. Clayton. Washington, D.C., U.S. Dept. of agriculture. Bureau of agricultural engineering. 1938. 22 p. processed.

Water holding capacity of soils and its effect on irrigation practices. By F.J. Veihmeyer and A.H. Hendrickson. Agricultural Engineering. v. 19, no. 11. p. 487-490. Bibliography. Knowledge of total amount of water soils will hold shortly after irrigation, the field capacity, must be supplemented by determination of residual water in soil in contact with roots of plants at time plants permanently wilt, permanent wilting percentage. Approximately correct statement is that permanent wilting percentage is lower limit of available water. Soils, below shallow surface layer which may be dried by direct evaporation, seldom dry out much below this moisture content. Water between field capacity and permanent wilting percentage is readily available to plants, and in our experiments no evidence of water shortage has been detected until moisture content of soil is reduced close to permanent wilting percentage. Field capacity and permanent wilting percentage may be considered as characteristic of soil and cannot be changed appreciably by addition of organic matter or other fertilizers. High field capacity may cause soil to be considered good, from moisture viewpoint, but actually it may be poor soil because of high permanent wilting percentage and small amount of readily available water may require frequent irrigations expecially with shallow-rooted crops and consequently waste involved in irrigating may materially increase use of water.

Soils.

Nitrate production in soils as influenced by cropping and soil treatments. By W.A. Albrecht. Columbia, Mo., 1938. 22 p. University of Missouri. Agricultural experiment station. Research bulletin 294.

Our soil; Its wastage--its preservation. Washington, U.S. Govt. print. off., 1938. 22 p. U.S. Department of agriculture. Soil conservation service. Region seven.

Solar Heat.

Figuring solar heat gains of buildings. By William Goodman. Heating, Piping and Air Conditioning. v. 10, no. 10. October 1938. p. 657-659.

Sprays and Spraying Equipment.

Deposit of aqueous solutions and of oil sprays. By W.M. Hoskins and Y. Ben-Amotz. Hilgardia. v. 12, no. 2. November 1938. p. 83-111. Bibliography.

Storage of Farm Produce.

South "sweetens" sweet potato profits by electric curing. By M.M. Johns. Electricity on the Farm. v. 11, no. 10. October 1938. p. 9-11.

Storage of Farm Produce. (Cont'd)

Sweet potato storage houses are being converted from stove heat to automatic electric heat with a resulting increase in percentage of marketable potatoes, improvement in quality, and better bank accounts.

Storing Irish potatoes for fall planting. By R.R. Reppert. College Station, Tex., 1932. 1 p. Mimeographed. Texas agricultural and mechanical college. Cooperative extension work in agriculture and home economics. Farm and home hints. no. 179.

Sugar Beets.

Productivity and employment in selected industries: Beet sugar. By R.K. Adamson and M.E. West. Philadelphia, Penn., 1938. 190 p. Works progress administration. National research project in cooperation with National bureau of economic research. Report no. N-1. Processed.

Surveying.

Precise levels run at night. By R.C. Sheldon. Civil Engineering. v. 8, no. 12. December 1938. p. 801-803. Night-time precise leveling was undertaken for first time in recent recheck of permanent bench marks in Canal Zone. By this procedure most of difficulties that beset surveyor in tropics--heat waves, glare, and high dry-season daytime winds-- were avoided; and speed and accuracy of work were increased. Equipment and methods are described, and results evaluated in article.

Topographis leveling and preparation of topographic maps for irrigation purposes. By I.D. Wood. Lincoln, Neb., 1937. 20 p. Mimeographed. Nebraska cooperative extension work in agriculture and home economics. Extension circular 758.

Use of triangulation. By William Bowie. Military Engineer. v. 30, no. 174. November-December 1938. p. 397-399.

Tires.

Rubber tired farm wagon. By E.C. Sauve. Michigan Agricultural experiment station. Quarterly bulletin. v. 21, no. 2. East Lansing, Mich., 1938. p. 110-112.

Tractor tire is knife-edged for better steering in mud. Popular Mechanics. v. 70, no. 3. September 1938. p. 398. This new tire has one-inch flange of rubber projecting out from its center, but is otherwise smooth. It does not clog with soil.

Uses and possibilities of rubber in agriculture. By Alexander Hay. London, 1938. 25 p. Bibliography. British rubber publicity association. Rubber and agriculture series. Bulletin no. 8.

Tractors.

An analysis of tractors on farms (By states and counties.) Philadelphia, Pa., Farm Journal, inc., 1937. 30 p. Processed.